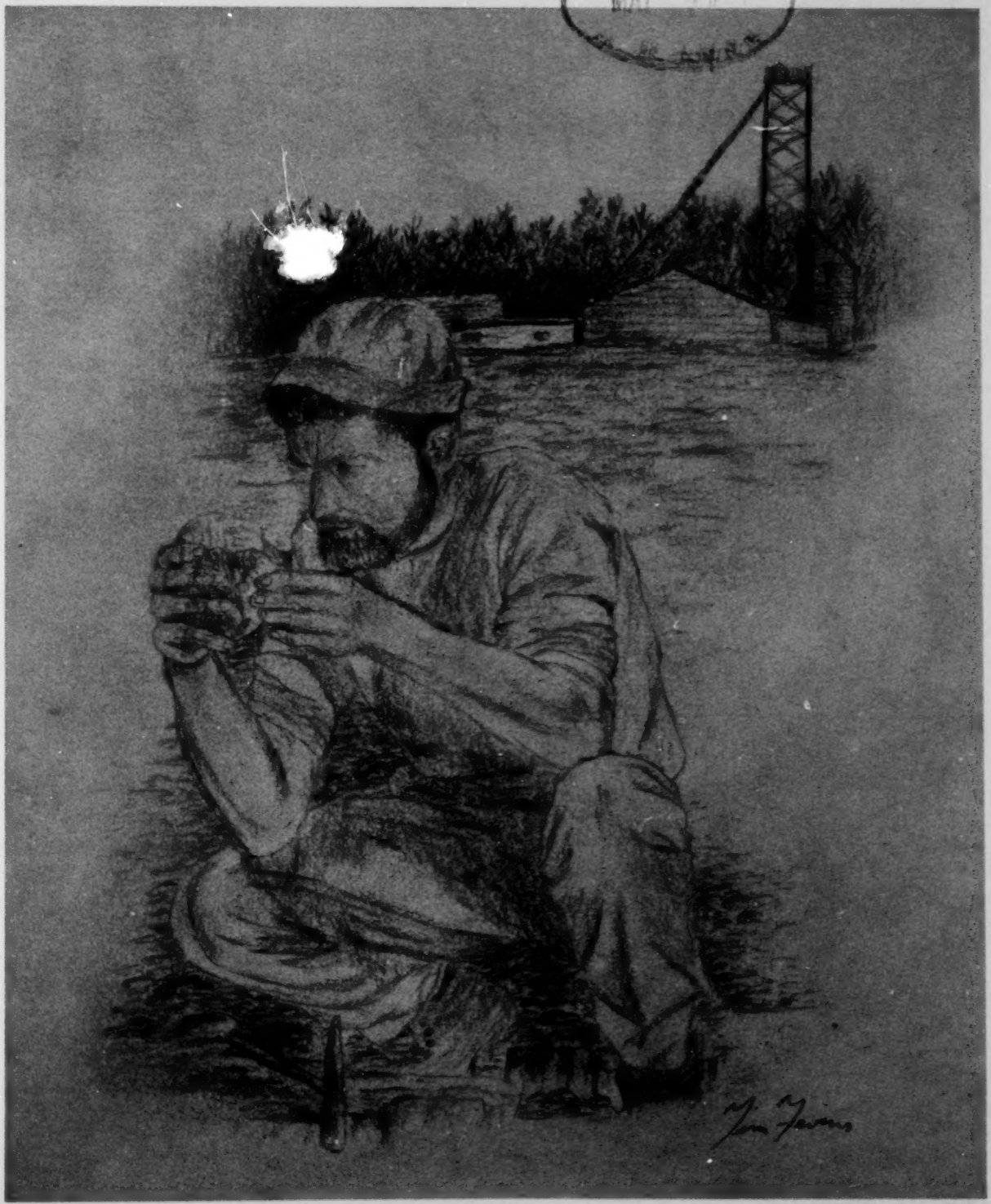
82-1

GRANULAR AGGREGATE RESOURCES OF RILEY BROOK (21 O/3), PLASTER ROCK (21 J/14) AND TUADOOK LAKE (21 J/15)

82-1

LEGISLATIVE LIBRARY
MAY

Open File Report 82-1 ISSN 0712-4562



NATURAL RESOURCES
NEW BRUNSWICK
RESSOURCES NATURELLES
NOUVEAU-BRUNSWICK

Government of Canada / Gouvernement du Canada
Regional Economic Expansion / Expansion Économique Régionale

84- 3890 /

This report has been prepared for:

Mineral Resources Division
Department of Natural Resources
Province of New Brunswick

Hon. E. G. Allen, Minister

1982

Funding in part provided by:

Government of Canada
Regional Economic
Expansion

Hon. Herb Gray, Minister

GRANULAR AGGREGATE RESOURCES
OF
RILEY BROOK (21 O/3), PLASTER ROCK (21 J/14)
AND TUADOOK LAKE (21 J/15)

Mineral Resources Division
Department of Natural Resources
New Brunswick

This is a Federal-Provincial development project, funded under the Minerals and Fuels Subsidiary Agreement of the Canada-New Brunswick General Development Agreement by the Government of New Brunswick and the Department of Regional Economic Expansion of Canada.

Copies available by contacting:

Mineral Resources Division
Department of Natural Resources
P. O. Box 6000, Fredericton, N.B.
E3B 5H1

Report No.: Open File Report 82-1

Authors: Claire Lavergne; Marilynn Hunter (Geocon Inc.)

Cover: Tim Fevens

Catalogue No.: ISSN 0712-4562

ABSTRACT

This report provides an inventory and evaluation of the distribution, extent, thickness and quality characteristics of granular aggregate deposits in the map-area covered by three 1:50,000 N.T.S. mapsheets: Riley Brook (21 O/3), Plaster Rock (21 J/14) and Tuadook Lake (21 J/15). Units of granular materials were mapped and comments made as to their origin. Sampling was carried out to determine the quality of the materials and estimates of recoverable reserves were calculated for most of the aggregate sources.

The major sources of aggregate are glaciofluvial deposits in the Tobique River valley. Other such deposits are found in the headwaters of the Dungarvon River and in the Little Southwest Miramichi River meltwater channel. Reserves of ice-contact materials are smaller and found mainly in small eskers and scattered deposits in the Tobique River valley. Total recoverable reserves are estimated to be 21.6×10^6 m^3, of which a substantial portion is of fair to moderate quality.

RÉSUME

Ce rapport décrit la nature, l'étendue, l'épaisseur et la qualité des dépôts granulaires de la région couverte par trois cartes du Système Topographique National, à une échelle de 1:50,000: Riley Brook (21 O/3), Plaster Rock (21 J/14) et Tuadook Lake (21 J/15). Les unités de dépôts granulaires ont été cartographiées selon leur mode de déposition. L'échantillonage a permis de déterminer la qualité des dépôts. Une évaluation des ressources exploitables a été faite pour la plupart des sources d'agrégat.

Les dépôts fluvioglaciaires de la vallée de la rivière Tobique représentent la principale source d'agrégat de cette région. D'autres dépôts de ce type se retrouvent dans le cours supérieur de la rivière Dungarvon et à l'intérieur du chenal d'écoulement fluvio-glaciaire de la rivière Little Southwest Miramichi. Les réserves en matériau de contact glaciaire sont moins importantes et ont été identifiées dans de petits eskers et des dépôts éparpillés dans la vallée de la rivière Tobique. Le total des réserves des dépôts granulaires a été évalué à 21.6×10^6 m^3. De cette valeur, une grande proportion est d'une qualité bonne à moyenne.

TABLE OF CONTENTS

	Page
ABSTRACT/RESUMÉ	i
TABLE OF CONTENTS	iii
ACKNOWLEDGEMENTS	v
INTRODUCTION	
1.1 Location	1
1.2 Access	1
1.3 Present Study	1
1.4 Duration of Study	2
1.5 Previous Work	2
PHYSIOGRAPHY	
2.1 Topography	3
2.2 Drainage	3
2.3 Bedrock Geology	3
2.4 Glacial Geology	4
AGGREGATE RESOURCES	
3.1 Classification of Materials	6
3.2 Description of Materials and Aggregate Production Potential	
3.21 Alluvium	7
3.22 Glaciofluvial outwash deposits	7
3.23 Ice-contact deposits	8
3.24 Ablation till	10
3.25 Other sources of aggregate	11
3.3 Field and Laboratory Methods	11
3.4 Reserve Calculations	12
3.5 Quality Limitations	13
SELECTED REFERENCES	15

Page

ILLUSTRATIONS

Figure 1: Location of Study Area vi
Figure 2: Physiographic Subdivisions of New Brunswick 5

APPENDIX 1: Sample Descriptions 16

PLATES

81-71: Riley Brook (21 O/3)
81-72: Plaster Rock (21 J/14)
81-73: Tuadook Lake (21 J/15)

ACKNOWLEDGEMENTS

We would like to thank David E. Baird (formerly with Geocon Inc.) for his cooperation in supervising the project; David E. Baird and Ron A. Brinsmead (Water Resources Branch, N.B. Department of the Environment) for reviewing and editing the report; Ron A. Brinsmead for the insight obtained from discussions of local and regional Quaternary geology; Mineral Resources Branch, N.B. Department of Natural Resources for use of unpublished 1:50,000 surficial geology field maps; Water Resources Branch, N.B. Department of the Environment for water well records; N.B. Department of Transportation for aggregate sample and test reports; J.D. Irving and Fraser Inc. for use of their forest roads; Geocon Inc. personnel for their support in this endeavour; Fenco Consultants for their cooperation in the preparation of the maps and report; John Astle and William (Bill) Heaton for their interest and help as field assistants and lab technicians.

C. Lavergne
M. Hunter

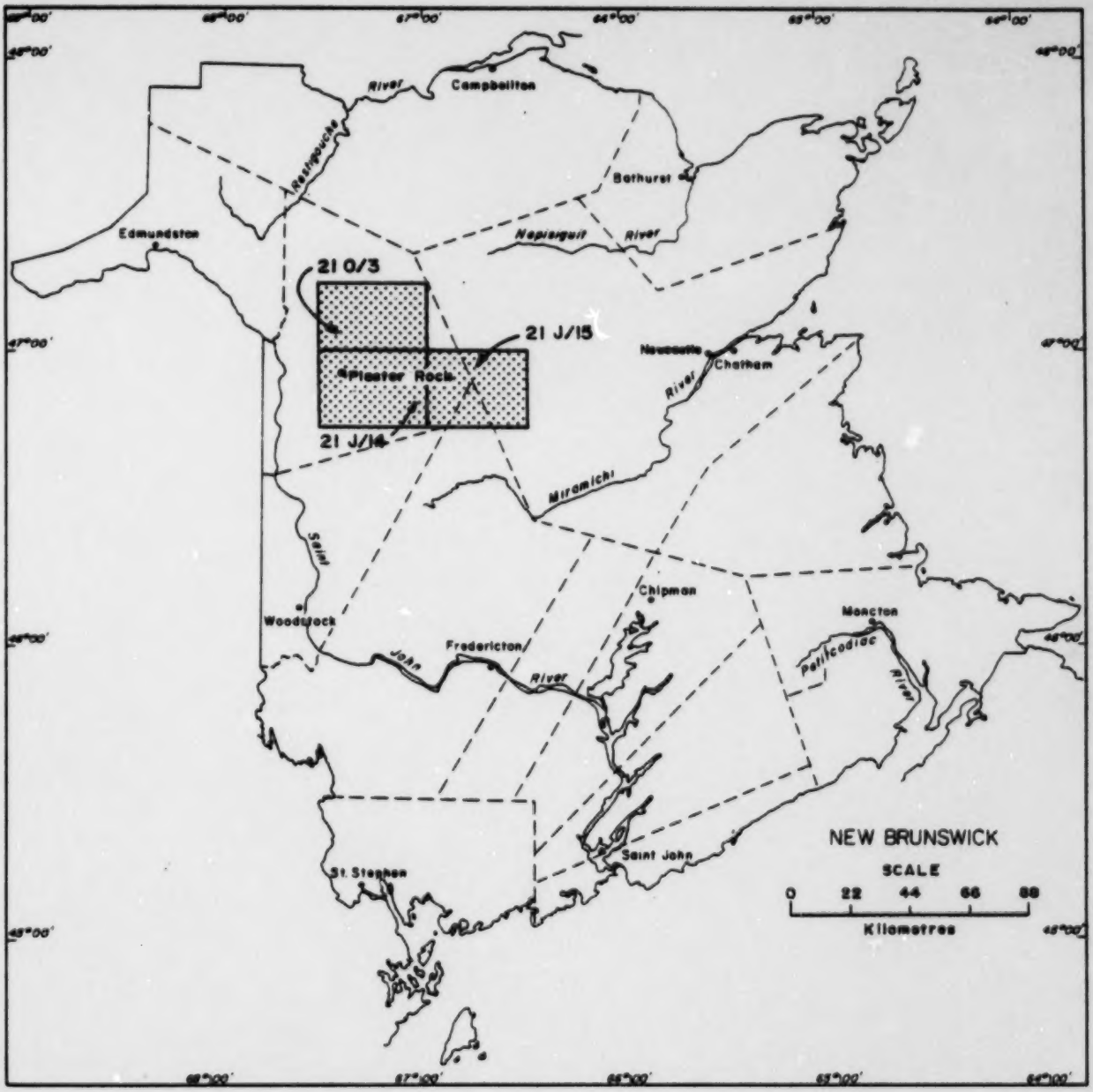


Figure I

Location Of Study Area

INTRODUCTION

1.1 Location

The study area is located in central western New Brunswick (Figure 1), covering an area of 3200 km^2. Plaster Rock is the only sizeable community.

Mapping was carried out at a scale of 1:50,000 using three N.T.S. mapsheets: Riley Brook (21 O/3), Plaster Rock (21 J/14) and Tuadook Lake (21 J/15).

1.2 Access

Two main highways cross the map-area: the Riley Brook - Plaster Rock Highway 385 and the Renous Highway 109. All-weather gravel forest access roads service most of the area. Abandoned roads and logging haul roads allow access to almost any point of interest, although mainly by four wheel drive truck.

1.3 Present Study

Geocon Inc. was retained by the Mineral Resources Division of the New Brunswick Department of Natural Resources to carry out a granular aggregate resource inventory of the Riley Brook, Plaster Rock and Tuadook Lake mapsheets as part of a province-wide survey program.

The aim of this study is to provide basic information on the distribution, extent, thickness and quality characteristics of granular aggregate deposits in the map-area. Previously published information was consulted and unpublished information was obtained from the Mineral Resources Division, the New Brunswick Department of Transportation and the Water Resources Branch of the provincial Department of the Environment. Field work involved examination of natural and man-made exposures and was supplemented by aerial photograph interpretation. Reserve estimates are based on field observations.

1.4 Duration of the Study

Field investigations for this map-area were conducted from late July to the end of August, 1981 as part of a larger contract covering four study areas totalling twelve mapsheets. The field program for all four areas was carried out by two field teams of two personnel each from mid-summer to early fall. Laboratory and office studies involved in the preparation of these reports were undertaken concurrently during the fall of 1981.

1.5 Previous Work

Early references to the surficial geology of the area were made by Chalmers around the turn of the century. More recent work carried out by other individuals (Thibault, 1980), primarily along the Saint John River Valley, deals with the glacial history in a more modern context. Rampton and Paradis (1981) have prepared a report and map of a revised Quaternary geology which covers the Plaster Rock and Tuadook lake mapsheets at a scale of 1:250,000.

Hamilton (1973) compiled a map showing the granular aggregate resources in New Brunswick. Since then, as part of a province-wide survey, granular aggregate inventories have been completed in some neighbouring map-areas at a scale of 1:50,000. (Thibault, 1980; Lee, 1962)

Bedrock geology mentioned in this report was obtained from the provincial bedrock map compiled by Potter et. al. (1979).

PHYSIOGRAPHY

2.1 Topography

The study area lies within two divisions of the Appalachian physiographic region (figure 2): the Chaleur Uplands and the New Brunswick Highlands (Bostock, 1970).

The Chaleur Uplands consist of a gently rolling topography. Hills range from 180 to 200 metres a.s.l. near Plaster Rock and increase in elevation to 335 metres a.s.l. in the north. Here, the hills rise abruptly from the broad glaciofluvial terraces of Riley Brook and Nictau.

East of the Tobique River, the topography slopes up gradually to the New Brunswick Highlands, a group of hills that rise to elevations of 550 to 670 metres a.s.l. Local relief ranges from 170 to 335 metres, resulting in a more rugged topography. In the Riley Brook mapsheet, high broad ridges are dominant including the Gulquac Mountains (530-580 metres), the Black Mountains (610-975 metres) and the Serpentine Mountains (610 metres).

2.2 Drainage

Generally, the map-area is moderately to well drained. Most streams, with the exception of a few minor variations, appear to have resumed their preglacial configurations.

The Chaleur Uplands are drained by the southerly flowing Tobique River, cutting across the map-area. In the New Brunswick Highlands, tributaries of the Tobique River, the Gulquac and Campbell Rivers, drain the area toward the northwest. The Dungarvon, Renous and Little Southwest Miramichi Rivers drain to the southeast into the Miramichi River.

2.3 Bedrock Geology

A geological map of New Brunswick was compiled in 1979 by Potter, Hamilton and Davies. The authors indicate the presence of a sedimentary

basin of Mississippian age underlying most of the west portion of the Plaster Rock mapsheet and the south central portion of the Riley Brook mapsheet. The bedrock consists of red to grey sandstone and conglomerate, siltstone, shale and limestone. The basin is surrounded by more sedimentary rocks of Paleozoic age with which are associated minor occurrences of igneous instrusions.

Most of the Tuadook Lake mapsheet consists of Devonian igneous rocks. A long belt of mafic volcanic flows trends northwest across the west half of this mapsheet.

2.4 Glacial Geology

During the late Wisconsin, ice probably covered all of New Brunswick. The map-area has probably been affected by glacial ice originating in the north and west - Laurentide ice which flowed from a source north of the Saint Lawrence River Valley through gaps in the Notre Dame Mountains (Rampton and Paradis, 1981). Several phases of late Wisconsin glaciation have been recognized and contribute to the complex glacial history of the area. Detailed accounts of this are available in Quaternary or surficial geology reports covering the area. (Rampton and Paradis, 1981)

Evidence of earlier glaciations has been found in the nearby Saint John River Valley (Rampton and Paradis, 1981; Lee, 1962). The most recent events are of greatest significance however, since they are responsible for the present day character and distribution of landforms and surficial materials. Most of the surficial materials in the study area consist of glacial drift which is deposited (1) directly as a result of glacial activity, and includes various types of moraines (basal and ablation till), and (2) by the action of meltwaters which includes stratified drift (ice-contact and glaciofluvial). Post-glacial erosion of glacial drift has resulted in the formation of alluvial deposits (floodplains and terraces) along most streams. Of interest to this study were the nature and extent of materials suitable for aggregate sources. Meltwater deposits are considered to be the best source of this commodity although other drift deposits have been utilized where the former are not available or are in short supply.

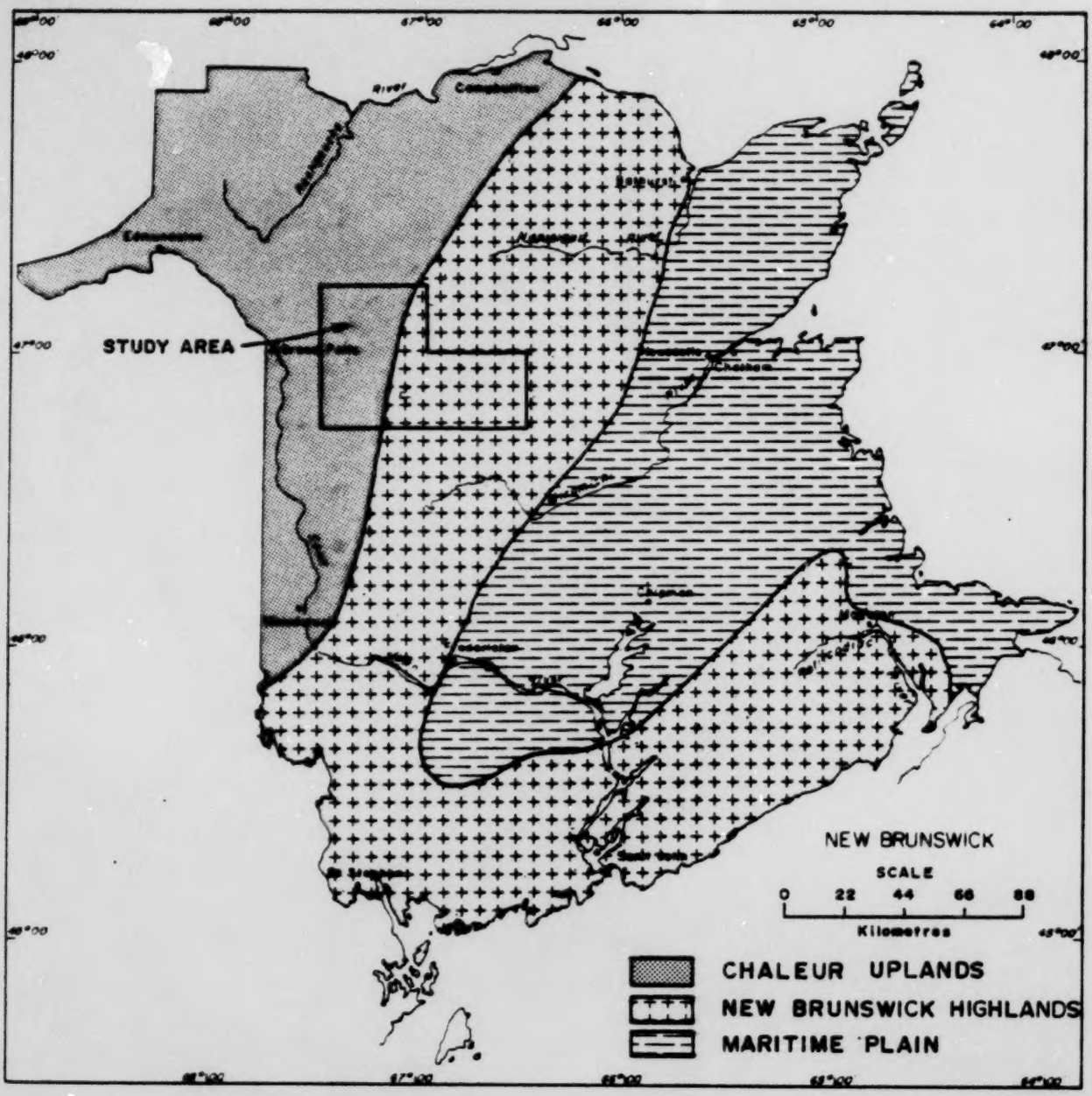


Figure 2

Physiographic Subdivisions Of New Brunswick

AGGREGATE RESOURCES

3.1 Classification of Materials

Unconsolidated materials are initially separated according to their origin or the way they in which are formed. They may then be subdivided according to their characteristics such as texture, surface expression and modifying processes. In this report, granular materials have been presented in such a way as to reflect their origin or mode of formation and their texture.

Four genetic materials have been identified as potential sources of granular aggregate. They are (1) alluvium, (2) glaciofluvial deposits, (3) ice-contact deposits, and (4) ablation till. These are described more fully in the following section (3.2).

Texture refers to the size, roundness and sorting of particles in unconsolidated sediments. Roundness and sorting are self-explanatory. Particle size distribution is based on a slightly modified version of the Unified Soil Classification System. The following table provides the details.

General Term	Specific Term	Particle Diameter	Sieve Sizes
Fines	Clay	Less than 0.002 mm	--
	Silt	0.002 to 0.075 mm	0.002 mm to #200
Sand	Sand	0.075 to 4.75 mm	#200 to #4
Gravel	Pebbles	4.75 to 75 mm	#4 to 75 mm
	Cobbles	75 to 200 mm	75 mm in. to 200 mm
	Boulders	Larger than 200 mm	Over 200 mm

3.2 Description of Materials and Aggregate Production Potential

3.21 Alluvium

Alluvial materials are transported and deposited by streams and rivers. Sediment is transported in two ways. Fine sand, silt and clay particles are carried in suspension whereas sand, pebbles and larger clasts are rolled and bounced along the river bed. Deposition occurs when the sediment load exceeds the transport capability of the flowing water. This commonly occurs where there is a decrease in stream gradient or where a constricted channel emerges into an unconstricted relatively broad area.

Alluvial materials consist of well sorted and bedded gravel, sand, and silt. Particle size may range from silt up to cobbles; clasts are generally rounded. Alluvial deposits are easily recognized by their well-defined bedding and stratification, locally consisting of alternating beds of relatively finer and coarser material. In general, texture of alluvial sediments will vary with the gradient of the depositing stream. Coarse gravels occur along steep mountain streams; fine gravels, sands and silts along low gradient channels.

The larger deposits of alluvium are found in low terraces along the Tobique River (e.g. 03-14); these have a silty capping and are being cultivated. Reserve estimates give a total exceeding 2.0×10^6 m^3 of potential granular aggregate from this source. Floodplain deposits are not indicated as they show evidence of the likelihood of periodic flooding. High water tables would severely limit their exploitation.

3.22 Glaciofluvial outwash deposits

Glaciofluvial materials are transported and deposited by streams and rivers directly in front of glacial ice. They differ from their alluvial counterpart in their variability, a consequence of their depositional environment. Typically a proglacial environment is unstable due to rapid fluctuations in the discharge and sediment load of meltwater streams and to changing positions of the ice front.

Glaciofluvial materials consist of well to poorly sorted, bedded to massive sediments that range in texture from silt and fine sand deposited under low flow conditions to massive bouldery gravel beds resulting from major floods. Variations of texture are common. Clasts are subrounded or round. Gravels generally contain a sandy matrix with traces of washed-in silt. Sometimes catastrophic events caused by the outbursts of ice-dammed lakes may result in deposition of much heterogeneous material.

Within the map-area, glaciofluvial sediments are found as outwash terraces along the Tobique River. Near Riley Brook (03-08) and Nictau, the materials indicate a braided channel depositional environment with lateral as well as vertical textural variation. A large glaciofluvial terrace near Reed's Island (J14-36) has been exploited in the past. Other major deposits are located on the western edge of the map-area (J14-24) extending two kilometers onto the Aroostook mapsheet (NTS 21 J/13), in the headwaters of the Dungarvon River (J15-17, J15-18) and in a large meltwater channel along the Little Southwest Miramichi River (J15-10: dominantly gravel, J15-14: dominantly sand).

Potential granular aggregate reserve estimates are 5.1×10^6 m^3 for Riley Brook, 3.4×10^6 m^3 for Plaster Rock and 2.2×10^6 m^3 for Tuadook Lake totalling 10.7×10^6 m^3. Most of this material is suitable only for borrow in the pit run state; however, quality could be improved with washing and screening in many cases.

3.23 Ice-contact deposits

Ice-contact materials are transported and deposited by meltwater streams in contact with glacial ice. Rapid fluctuations in discharge and sediment load of meltwater streams and changing positions of ice margins result in an unstable depositional environment. Sediments deposited in contact with a glacier tend to slump and slide as supporting ice melts, resulting in irregular surfaces on landforms, and faults and contorted bedding within the materials.

Ice-contact sediments consist of sorted and non-sorted, bedded and massive materials that range in texture from silt and fine sand deposited under low flow conditions to cobble-boulder beds resulting from major floods. Abrupt variations of texture are typical. Lenses or pockets of silt may be present where meltwater was locally ponded. Layers or pockets of flow till resulting from saturated supraglacial debris sliding off the ice may be included in the materials.

Ice-contact sediments are found in a variety of topographic forms, the more easily recognizable being kames, kame terraces and eskers.

Kames are conical mounds or small hills of granular materials with a local relief of 2 m to several tens of metres. They form where meltwater sediments are deposited in depressions on the ice surface and later melt out to form chaotically arranged hills and hollows. Kames may be single or grouped. Several kame deposits were identified along the Odell River and described by J14-02.

Kame terraces form when glaciofluvial sediments are deposited between the glacial ice and an adjacent hillside. Steep ice-contact scarps develop as the ice recedes and leaves the outer edge of the terrace without any lateral support. Collapse and slumping occurs along this scarp and melting of buried ice produces an irregular terrace surface. It is possible that the glaciofluvial terrace described by J14-36 near Reed's Island is a kame terrace. This terrace contains several large gravel pits which have been exploited in the past.

Eskers are sinuous, steep-sided ridges of sand and gravel formed by the melting out of sediment-choked tunnels of subglacial streams. Their length varies from several tens of metres to many kilometres; their height ranges from a few metres to 20 to 30 metres. Some eskers were noted within the Little Southwest Miramichi meltwater channel located in the northeast corner of 21 J/15. These and other small eskers generally do not contain abundant reserves and are, at present, mostly inaccessible.

An area south of the Tobique River (J14-33, J14-34 and J14-35,) has an irregular surface topography and is suspected to be a discontinuous ice-contact deposit of variable thickness.

Total estimated reserves of potential granular aggregate originating from ice-contact materials are 9.3×10^6 m^3. Most of this material is suitable only for borrow in the pit run state; however quality could be improved with processing in some cases.

3.24 Ablation till

Ablation till is formed during deglaciation. As the ice melts, debris on the surface slumps and slides back and forth, eventually to be deposited as irregular hummocks and ridges or as a blanket overlying basal till. Hummocky or ridged ablation till can be difficult to distinguish from ice-contact granular materials; blankets can only be recognized by ground observation of exposed sections. Ablation till is commonly found where large ice masses have stagnated in situ.

Ablation till is typically a loose, non-sorted, non-stratified sandy, silty gravel. Fines may be selectively washed out during deposition. Pockets of stratified silts, sands and/or gravels as well as very large boulders may be present within the deposit.

A group of isolated, sometimes elongate, hills in the Plaster Rock mapsheet were mapped as moraine. An exposure at J14-31 shows a narrow glaciofluvial terrace flanking 20 m of till. While some of the hills appear to be bedrock-cored, others appear to be more ice-contact in nature. Limited time and very poor access to these hills did not permit further investigations; it is believed that other glaciofluvial materials may be found associated with this morainal complex in a manner similar to that referred to at J 14-31.

While deposits of this kind are usually poor aggregate producers, isolated pockets of stratified gravels and sand could provide local reserves of limited good quality material. Otherwise they may be good sources of low-grade borrow material. However unless presently being exploited, ablation till was not considered as an aggregate source for this report.

3.25 Other sources of aggregate

In general, glacial drift is the major source of granular aggregate. However, several borrow pits in shattered or weathered bedrock were noted. These are described by J14-11, J15-02, J15-16, and Ø3-16 in Appendix 1.

3.3 Field and Laboratory Methods

Information used in the determination of deposit boundaries and thicknesses was obtained by the examination of all natural and man-made exposures that were encountered while driving all the passable roads within the map-area and was supplemented by aerial photograph interpretation. Many of the exposures were improved by a little shovel work; some had to be dug to expose even a small section. Observation of granular materials at depth was restricted to pit excavations and a few natural cuts, limiting the accuracy of thickness estimates.

Deposit boundaries were determined by field observations where possible and by aerial photograph interpretation. Average material depths used in the calculations of reserves were obtained by modifying, where necessary, the observed depths, taking into account geologic and topographic considerations and air photograph observations of the deposit beyond excavation boundaries. Airphotos at a scale of 1:20,000 were used in the field and later in the office during the preparation of the maps and report.

Samples of granular materials were taken from the best exposures available in partially exploited and unused deposits. Care was taken to obtain samples that were as representative of the deposit as possible. Where notable variation was present within a particular deposit, more than one sample was taken (when feasible) to illustrate this.

For practical purposes, deposits with significant cobble and/or boulder content were sampled by deliberately excluding these large clasts and estimating their number as a percentage of the total exposed face. The mechanical analyses of these samples would therefore represent the particle

size distribution of the finer fractions (less than 75 mm) and should be used with the percentage estimates given in the field notes.

Mechanical and lithological analyses were conducted in the lab during the fall of 1981. For the mechanical analyses, samples were dried, split, sieved, and the results weighed. Approximately one hundred of the largest pebbles (20 mm to 50 mm size) were used for each of the lithologic analyses. Clasts were subjected to a qualitative "failure- under-impact" test. Clasts that broke were considered unsound and the remainder were considered sound. Lithotype of each pebble was noted. Since this procedure does not conform to any standard tests used by aggregate producers, the material should be tested using conventional methods for soundness and abrasion if it is desirable and otherwise suitable for high specification use.

In addition to field observations and laboratory analyses, Department of Transportation aggregate test reports and Water Resources Branch, Department of Environment water well records were consulted for any additional information. D.O.T. data has been entered in the sample descriptions where there was positive correlation of sites. Water well locations have been plotted on the accompanying maps where drill logs have indicated an intersection with sand and/or gravel. The serial numbers of the locations are noted for future reference.

3.4 Reserve Calculations

Deposit boundaries are shown as approximate and inferred, depending on the availability of adequate evidence to substantiate airphoto interpretations. Reserve calculations based on inferred boundaries should be regarded with a lesser degree of confidence than if the boundaries are approximate.

Similarly, the reliability of the material thickness information will affect the degree of confidence in the reserve figures. Where good exposures of well-defined deposits were observed, thickness data is considerably

more dependable than a poorly exposed section of a deposit with indistinct boundaries.

In general, both thickness and deposit area figures have been kept conservative in making reserve calculations. In addition, reserve figures have been further reduced, somewhat qualitatively, because recoverable reserves are usually significantly less than reserves calculated on a strict "area x thickness" basis. This has been reflected in a reduced average thickness for the deposit.

It must be stressed that the lateral and vertical extent of any deposit is at best an estimate based on airphoto examination and first hand visual appraisal of the deposit. Therefore prior to any exploitation, consideration is required for a detailed examination for qualitative and quantitative evaluation with respect to a specific end use.

Department of Transportation reserve figures may not necessarily agree with reserve calculated in this report. This is likely a result of boundary constraints of property available to them.

3.5 Quality Limitations

The quality of granular aggregate deposits for high specification use is affected by three major factors: texture, clast lithotypes, and alkali-reactivity.

(1) Texture:

A high content of fine particles (smaller than the 200-mesh sieve) renders a potential aggregate material unsuitable for high specification uses in the pit run state. Washing could lower the fines content to an acceptable level; however, any processing will increase the cost of exploitation.

An excess of coarse material (cobbles and boulders) can pose operational problems but will not necessarily affect the quality of the

deposit. Removal of the "oversize" clasts and the alternative of crushing them are both costly procedures. Crushing, however, might produce a higher grade of aggregate.

In general, a uniform well-graded deposit with few fines and few "oversize" clasts is desireable for most general uses.

(2) Clast Lithotypes:

High specification aggregate should be hard, strong, uncoated, and resistant to both physical and chemical weathering. The lithologic analyses recorded in Appendix 1 have grouped the lithotypes into sound and unsound classes.

There are several ways of assessing the soundness of a lithotype. Detailed petrographic analysis, the magnesium sulphate soundness test and the Los Angeles abrasion loss test are the most common for testing the overall quality of an aggregate. Details for these and other tests are specified by the American Society for Testing and Materials (A.S.T.M.). Methods used in this study are described in section 3.3.

In general, high quality rocks include diabase, granite, gabbro, hard gneiss, basalt, andesite and greywacke and fair quality rocks include conglomerate, schist and limestone/dolomite. Poor quality rocks include argillite, chert, phyllite, slate, soft sandstone, and volcanic tuff Some discrepancies were observed between this listing and the results of tests performed in this study, but can be explained by the excessive weathering and friability of some of the clasts (e.g. weathered granites).

Very often, the quality of aggregate within a deposit will be closely related to the underlying bedrock type. In areas where poorly indurated sedimentary and low grade metamorphic rocks occur, the materials are more likely to have a higher percentage of unsound lithotypes than areas where the deposits are underlain by intrusives and volcanic rocks.

SELECTED REFERENCES

A.S.T.M.: American Society for Testing and Materials Annual Book of A.S.T.M. Standards (up-dated annually).

Bostock, H.S. 1970: Physiographic Regions of Canada. Geological Survey of Canada, Map 1254A.

Chalmers, R.C. 1884: Report on the surficial geology of western New Brunswick with special reference to the area included in York and Carleton Counties. Geological and Natural Survey of Canada, Report of Progress 1882-84, Section G.g. 47 p.

Hamilton, J.B. 1973: Generalized Surficial Geology, illustrating the distribution of granular resources in New Brunswick. N.B. Department of Natural Resources, Mineral Resources Branch, Plate 73-14.

Hamilton, J.B. and Carroll, D.J.J. 1975: Sand and Gravel in New Brunswick. New Brunswick Department of Natural Resources, Mineral Resources Branch, Report of Investigation No. 16.

Lee, H.A. 1962: Surficial geology of Canterbury, Woodstock, Florenceville and Andover map areas; York Carleton and Victoria Counties, New Brunswick (Parts of 21 G/14, 21 J/14, 21 J/5, and 21 J/12). Geological Survey of Canada, Paper 62-12.

Potter, R.R. et. al. 1979: Geological map of New Brunswick. New Brunswick Department of Natural Resources Map N.R.-1.

Rampton, V.N. and Paradis, S. 1981: Quaternary Geology of the Woodstock map-area (21 J), New Brunswick. N.B. Department of Natural Resources, Map Report 81-1.

Swenson, E.G. 1973: Alkali-expansivity of some concrete aggregates in Nova Scotia. Atlantic Industrial Research Institute.

Thibault, J. 1980: Granular Aggregate Resources: Saint-André (NTS 21 O/4), Aroostook (NTS 21 J/13). New Brunswick Department of Natural Resources, Mineral Resources Branch, open file Report 80-6 (with plates 80-80 and 80-81.

APPENDIX 1

SAMPLE DESCRIPTIONS
of
RILEY BROOK (21 O/3), PLASTER ROCK (21 J/14)
and TUADOOK LAKE (21 J/15)

* Subsequent review of the Lithological Analysis indicates there may be a confusion of fine grained Basic Igneous lithotypes with Greywacke

Location #: Ø3-01

County: Victoria

Type of Deposit: Ice-contact

Parish: Lorne

Exposure Type: Terrace scarp

NTS: 2] Ø/3E

Status: Undeveloped

UTM: 285113

Section Description & Comments:

This exposure is 12 m high. Because of the thick slump cover, only 2 m of it is described. This deposit is a crudely stratified, poorly sorted, cobbly pebbly coarse sand. Pebbles range between 2 mm and 1 cm. Cobbles are quite abundant and a few weathered sandstone boulders were noticed. Clasts are coated with fines, and are subrounded to rounded. Fines are generally abundant.

This terrace is interpreted as only flanking a bedrock outcrop.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	89.0	75.1	70.4	57.2	45.2	33.5	14.8	7.5	5.8	4.8	3.9

Lithologic Analysis:

Unsound Lithotypes (%) 40		Sound Lithotypes (%) 60	
Sandstone	26	Acid Igneous	4
Sedimentary	14	Sandstone	52
		Siltstone	2
		Conglomerate	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: Ø3-02

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Lorne

Exposure Type: Sand pit

NTS: 21 Ø/3W

Status: Active on demand

UTM: 286084

Section Description & Comments:

0 - 0.6 m Overburden.
0.6 - 2.0 m Moderately to well sorted, pebbly coarse sand.
2.0 - 7.0 m Slump covered.
7.0 - 9.0 m A trench of two metres depth below the floor of the pit shows a coarse sand, well sorted.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing			99.4	97.8	88.9	71.2	33.3	11.6	6.2	5.0	4.5

Lithologic Analysis:

Unsound Lithotypes (%) 54		Sound Lithotypes (%) 46	
Sandstone	36	Sandstone	24
Acid Igneous	10	Metasediment	16
Sedimentary	8	Acid Igneous	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3.7	3.7	3-4	130,000

Location #: Ø3-03 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Roadcut NTS: 2] Ø/3W

Status: Undeveloped UTM: 282122

Section Description & Comments:

0 - 0.7 m Overburden
0.7 - 3.0 m Moderately to poorly sorted, cobbly pebble gravel with occasional boulders. Clasts are flat, mainly subrounded and coated with fines.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.9	82.6	75.4	53.9	35.5	27.0	16.0	10.3	7.8	6.1	4.8

Lithologic Analysis:

Unsound Lithotypes (%) 24		Sound Lithotypes (%) 76	
Sandstone	24	Basic Igneous *	10
		Sandstone	46
		Acid Igneous	2
		Metasediment	12
		Andesite	4
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2.5	2.5	2	50,000.

Location #: Ø3-04 **County:** Victoria

Type of Deposit: Glaciofluvial **Parish:** Lorne

Exposure Type: Borrow pit **NTS:** 21 Ø/3W

Status: Active on demand **UTM:** 280123

Section Description & Comments:

Approximately 7 m of moderately sorted, stratified medium sand and gravel. Clasts are subrounded to rounded. This deposit is very compact (pit has vertical walls); fines content abundant.

Small pond at the bottom of the pit.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
1.5	1.5	7	105,000

Location #: Ø3-05 **County:** Victoria

Type of Deposit: Glaciofluvial **Parish:** Lorne

Exposure Type: Borrow pit **NTS:** 2] Ø/3W

Status: Abandoned **UTM:** 289144

Section Description & Comments:

Approximately 2 m of moderately to poorly sorted, cobbly gravel (0.5m) grading downwards into a moderately sorted pebbly gravel (dominant texture 2 cm). Clasts are subrounded to rounded.

30 m to the south is another exposure of the same deposit.

D.O.T. data (1974) indicate a Los Angeles abrasion loss of 25.6 to 28.8%. The material is recommended for borrow and marginal quality subbase. D.O.T. says that if the dirty sections of the deposit could be avoided, base course aggregate could be produced from this deposit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	98.5	94.5	85.7	48.7	19.5	8.6	4.8	3.6	3.2	2.8	2.5
D.O.T. 1974	93.0		73.0	51.0	28.0	14.0		6.0			4.1
D.O.T. 1974	75.0		56.0	37.0	21.0	12.0		7.0			4.3

Lithologic Analysis:

Unsound Lithotypes (%) 22		Sound Lithotypes (%) 78	
Sedimentary	22	Basic Igneous *	20
		Sandstone	28
		Metasediment	26
		Acid Igneous	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10.5	3	2	60,000

Location #: Ø3-06 **County:** Victoria

Type of Deposit: Glaciofluvial **Parish:** Lorne

Exposure Type: Gravel pit **NTS:** 2] Ø/3W

Status: Active on demand **UTM:** 295147

Section Description & Comments:

Approximately 8-10 m of moderately sorted, interstratified fine sand and pebbly silty fine sand is exposed. Clasts are coated with fines, subrounded to rounded and mainly flat in shape. Average thickness of the beds is 0.5 m. The slightly silty very fine sand gives this deposit its good cohesion; maximum clast size is 16 cm.

Sandstone outcrops at the floor of the pit.

D.O.T. data (]974) indicate a Los Angeles abrasion loss of 25.7 to 26.6% and that the material can be recommended for borrow, subbase and base course (]°" crushed) aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		89.1	78.6	48.1	27.7	22.5	17.7	12.5	5.9	3.4	2.4
D.O.T. 1974	81		67.0	45.0	24.0	13.0		5.0			2.5
D.O.T. 1974	88		72.0	45.0	23.0	13.0		6.0			3.2

Lithologic Analysis:

Unsound Lithotypes (%)]0		Sound Lithotypes (%) 90	
Acid Igneous	4	Basic Igneous *	14
Sandstone	6	Sandstone	48
		Metasediment	14
		Acid Igneous	14

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
5	5	8	400,000

Location #: Ø3-07 County: Victoria

Type of Deposit: Alluvium Parish: Lorne

Exposure Type: Borrow pit NTS: 2] Ø/3W

Status: Abandoned UTM: 323173

Section Description & Comments:

0 - 0.5 m Overburden.
0.5 - 2.0 m Cobbly pebbly sand. Clasts are subrounded to rounded. Another exposure of this deposit was observed 200 m to the southeast.

The water table lies at the bottom of the pit thus limiting exploitation of this deposit. In addition, the southeast end of this terrace, along the river shore has been converted into a campground.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	98.4	82.2	77.4	59.9	46.2	34.7	22.5	13.3	4.7	2.0	1.7

Lithologic Analysis:

Unsound Lithotypes (%) 10		Sound Lithotypes (%) 90	
Sandstone	10	Basic Igneous *	16
		Sandstone	36
		Acid Igneous	14
		Metasediment	18
		Andesite	4
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
26	20	1.5	300,000

Location #: Ø3-08 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Gravel pit NTS: 2] Ø/3E

Status: Active on demand UTM: 353262

Section Description & Comments:

A thickness of 3 m of moderately sorted, stratified sand and cobbly pebble gravel is exposed. Clasts are subrounded and mainly blade-like. Average pebble size is 2 cm, maximum clast size 10 cm.

Deposits of locations Ø3-08, Ø3-09, occur within a braided channel environment and might be expected to vary texturally.

Reserve calculations only estimate the value for the deposit as outlined on the map sheet. Further investigations should be conducted in order to outline other portions of quality material.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		93.0	87.5	70.1	54.0	44.6	30.6	15.7	6.5	5.2	4.6

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)]00	
	Sandstone	54
	Basic Igneous *	24
	Metasediment	20
	Acid Igneous	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
24 See also Ø3-09	8.75	2	175,000

Location #: Ø3-09 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Borrow pit NTS: 2] Ø/3E

Status: Abandoned UTM: 349256

Section Description & Comments:

Approximately 3-4 m of moderately to poorly sorted gravelly sandy silt is exposed.

The pit faces are now overgrown with vegetation and a pond is filling the bottom of the pit.

Although reserves are large, poor quality material would probably limit extensive exploitation of this deposit.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	120	3	3,000,000

Location #: Ø3-10 **County:** Victoria

Type of Deposit: Glaciofluvial **Parish:** Lorne

Exposure Type: Borrow pit **NTS:** 2] Ø/3E

Status: Abandoned **UTM:** 374286

Section Description & Comments:

4 m of moderately sorted, stratified, silty sand and pebble gravel are exposed. Fines are quite abundant, occasional cobbles were observed. Clasts are subrounded to rounded.

This is a very poor quality deposit because of its high silt content.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	98.8	95.1	89.8	76.4	66.4	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Lithologic Analysis:

Unsound Lithotypes (%) 20		Sound Lithotypes (%) 80	
Sandstone	16	Sandstone	42
Acid Igneous	4	Basic Igneous*	22
		Acid Igneous	8
		Volcanic	2
		Quartz	2
		Quartzite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
12	10	4	400,000

Location #: Ø3-11 County: Victoria

Type of Deposit: Glaciofluvial blanket Parish: Lorne

Exposure Type: Roadcut NTS: 2] Ø/3E

Status: Undeveloped UTM: 396341

Section Description & Comments:

0 - 0.6 m Overburden.
0.6 - 2.1 m Moderately sorted pebbly sand. Cobbles are scarce with a maximum size of 12 cm. Clasts are subrounded to rounded and slightly coated with fines.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			Minimal

Location #: Ø3-12 County: Victoria

Type of Deposit: Till Parish: Lorne

Exposure Type: Borrow pit NTS: 2] Ø/3E

Status: Abandoned UTM: 372274

Section Description & Comments:

Approximately 3 m of a very compact, massive, light beige till is exposed. The silty sand matrix is quite abundant. Dominant pebble size is 1-2 cm. Clasts are angular to subangular. Cobbles are scarce.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		3	

Location #: Ø3-13 County: Victoria

Type of Deposit: Ice contact - kame Parish: Lorne

Exposure Type: Borrow pit NTS: 2] Ø/3E

Status: Active on demand UTM: 4]5259

Section Description & Comments:

0 - 1.0 m Light beige till.
1.0 - 4.0 m Crudely stratified, moderately to poorly sorted sandy cobbly pebble gravel. Pebble size is dominantly 2-3 cm. Clasts are flat, subrounded, and coated with fines. Cobble content is greater than 5%.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	93.9	85.5	81.2	53.2	29.2	10.1	3.4	2.2	2.1	1.9	1.6

Lithologic Analysis:

Unsound Lithotypes (%) 28		Sound Lithotypes (%) 72	
Basic Igneous	6	Metasediment	30
Sandstone	10	Sandstone	12
Slate	2	Basic Igneous *	20
Sedimentary	10	Acid Igneous	4
		Quartzite	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2	0.2	4	6,000

Location #: Ø3-14

County: Victoria

Type of Deposit: Alluvial

Parish: Lorne

Exposure Type: Roadcut

NTS: 2] Ø/3E

Status: Undeveloped

UTM: 349236

Section Description & Comments:

0 - 0.3 m Silt.
0.3 - 0.6 m Clay enriched zone.
0.6 - 1.6 m Moderately to poorly sorted cobbly sandy pebble gravel. Clasts are subrounded to rounded, mainly flat. The cobble content is about 5%.

Alluvial terraces downstream and on the west side of the Tobique River are estimated to contain an additional 1,000,000 m^3 granular material.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	87.8	74.1	68.2	51.9	37.7	26.9	16.2	7.1	2.5	1.5	1.2

Lithologic Analysis:

Unsound Lithotypes (%) 2		Sound Lithotypes (%) 98	
Sedimentary	2	Metasediment	28
		Basic Igneous *	36
		Acid Igneous	10
		Sandstone	20
		Andesite	2
		Quartz	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
80	60	1	500,000

Location #: Ø3-15

County: Victoria

Type of Deposit: Glaciofluvial blanket

Parish: Denmark

Exposure Type: Trench

NTS: 2] Ø/3W

Status: Undeveloped

UTM: 263324

Section Description & Comments:

0 - 1.5 m Massive, poorly sorted, cobbly pebbly coarse sand. Pebbles size ranges between 2 and 5 cm. Clasts are angular to sub-angular.

Similar materials may possibly be found within the confine of of the meltwater channel beyond the in erred boundries shown, but would generally be less than 1 m thick.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		90.5	83.5	64.3	42.1	26.8	14.8	9.9	8.0	7.0	6.0

Lithologic Analysis:

Unsound Lithotypes (%) 28		Sound Lithotypes (%) 72	
Mudstone	18	Basic Igneous*	24
Siltstone	10	Metasediment	30
		Quartzite	2
		Sandstone	16

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	8		100,000

Location #: Ø3-16 County: Victoria

Type of Deposit: Bedrock Parish: Lorne

Exposure Type: Quarry NTS: 2] Ø/3W

Status: Active on demand UTM: 264]97

Section Description & Comments:

This shale outcrop is 20 m high. A large pit is opened in this outcrop.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: Ø3-17 County: Victoria

Type of Deposit: Ice Contact Parish: Lorne

Exposure Type: Borrow pit NTS: 2] Ø/3E

Status: Active on demand UTM: 432]]8

Section Description & Comments:

0 - 0.5 m Overburden
0.5 - 2.1 m Massive, moderately sorted cobbly sandy pebble gravel. Cobble content represents about 3%. Clasts are subangular to subrounded with fines coating them.

This is a ridged deposit with a north/south elongation. Length: 50 m, height 5 m, width 10-15 m.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	96.5	87.7	75.5	53.3	24.0	10.1	3.4	2.5	2.3	2.2	2.0

Lithologic Analysis:

Unsound Lithotypes (%) 26		Sound Lithotypes (%) 74	
Sandstone	22	Sandstone	38
Basic Igneous	2	Acid Igneous	14
Acid Igneous	2	Metasediment	8
		Basic Igneous*	10
		Quartzite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
	2	5	100,000

Location #: Ø3-18 **County:** Victoria

Type of Deposit: Alluvium **Parish:** Lorne

Exposure Type: Gravel pit **NTS:** 2] Ø/3

Status: Abandoned **UTM:** 348247

Section Description & Comments:

0 - 1.0 m Silt, light beige.
1.0 - 3.0 m Poorly sorted, cobbly pebble gravel. Pebble size ranges from 2 mm to 6 cm. Cobbles maximum size is 15 cm. Clasts are subrounded to rounded, coated with silt and show a flat shape. A pond (1 m deep) fills the bottom of the pit.

Another exposure was observed nearby (approximately 50 m east):

0 - 0.4 m Overburden.
0.4 - 3.0 m Moderately sorted, interstratified pebbly medium sand and pebble gravel. Cobbles are scarce Clasts are subrounded, flat, elongated, and coated with silt. The maximum clast size is 13 cm.

D.O.T. data (1963) indicate a Los Angeles abrasion loss of 21.3 to 23.5% and that the deposit can be recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											
D.O.T. 1963			63.4		35.6			7.0			1.3
D.O.T. 1963			61.6		33.7			8.7			1.3

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	16	2-3	350,000

Location #: Ø3-19 County: Victoria

Type of Deposit: Ice contact Parish: Denmark

Exposure Type: Roadcut NTS: 2] Ø/3W

Status: Undeveloped UTM:]7]262

Section Description & Comments:

Approximately 1.5 m of a moderately sorted, pebbly medium sand are exposed. Clasts are subrounded. This unit is too small to be mapped (30 m x 5 m x 1.5 m).

May be associated with ridge to NW (about 4 km) where presence of esker is possible (not positively identified).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J14-01

County: Victoria

Type of Deposit: Ablation till blanket

Parish: Gordon

Exposure Type: Borrow pit

NTS: 2] J/]4W

Status: Abandoned

UTM: 171787

Section Description & Comments:

Approximately 3 m of massive, moderately to poorly sorted, pebbly silty sand are exposed. Clasts are subangular to subrounded. Blade-like shape was quite uniform throughout the exposure. Occasional cobbles were noticed. Dominant gravel size is 2 cm.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		3	

Location #: J14-02 County: Victoria

Type of Deposit: Ice-contact - kame Parish: Gordon

Exposure Type: Borrow pit NTS: 2] J/]4W

Status: Abandoned UTM: 236816

Section Description & Comments:

0 - 0.9 m Bt horizon (clay enrichment)-overburden.
0.9 - 1.9 m Massive, moderately sorted pebbly coarse sand. Clasts show blade-like shape. Trace amount of cobbles and pebbles (average 5% total).

The well-defined knolls to the south are believed to contain similar materials but quality and quantity are unknown.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		96.1	94.8	83.8	70.5	49.6	27.6	16.2	10.8	7.3	5.2

Lithologic Analysis:

Unsound Lithotypes (%)		Sound Lithotypes (%)	
Sedimentary	20	Volcanic	6
Volcanic	2	Metasediment	28
Acid Igneous	4	Sandstone	30
		Acid Igneous	4
		Basic Igneous*	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
35	7.5	2-3	]90,000

Location #: J14-03

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Borrow pit

NTS: 2] J/]4W

Status: Abandoned

UTM: 253787

Section Description & Comments:

0 - 0.7 m Overburden, "till like", clay enrichment horizon
0.7 - 2.5 m Graded poorly sorted gravelly sand. Gravel increases downwards in size and content. A few cobbles are present.
2.5 - 12 m Slump covered.

The exposure is 12 m high x 18 m wide and exploited in two levels. This deposit appears to be part of a remnant.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7	3	3	]00,000

Location #: J14-04

County: Victoria

Type of Deposit: Ice contact

Parish: Gordon

Exposure Type: Borrow pit

NTS: 2] J/]4E

Status: Abandoned

UTM: 345793

Section Description & Comments:

0 - 0.2 m Overburden.
0.2 - 1.2 m Crudely stratified, poorly sorted, coarse sandy gravel. Cobbles and boulders are present (5%). Most clasts are coated with fines. One pocket of fine sand (1 m x 1 m) was observed.
1.2 - 2.0 m Slump covered.

Two ponds have formed in the bottom of the pit. This deposit is typical of near source material, as indicated by the coarse crudely stratified nature of the deposit.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.0	74.4	67.5	47.5	32.8	22.0	7.2	2.0	1.5	1.4	1.39

Lithologic Analysis:

Unsound Lithotypes (%)]4		Sound Lithotypes (%) 86	
Acid Igneous	2	Sandstone	44
Sandstone	12	Siltstone	34
		Metasediment	4
		Acid Igneous	2
		Basic Igneous*	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	6	2	100,000

Location #: J14-05 County: Victoria

Type of Deposit: Outwash (undulating) Parish: Gordon

Exposure Type: Gravel pit NTS: 2] J/14E

Status: Active on demand UTM: 503832

Section Description & Comments:

0 - 1.5 m Massive, poorly sorted, gravelly medium sand. Clasts are sub-angular and flattened in shape, cobble content: 5%.

1.5 - 6.0 m Slump covered.

The inferred boundary for this deposit did not allow any precise reserve calculation. The figure given is based on estimated boundaries and thickness.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	95.6	86.0	81.0	67.8	55.7	44.7	30.4	12.6	2.2	0.8	0.6

Lithologic Analysis:

Unsound Lithotypes (%) 20		Sound Lithotypes (%) 80	
Metasediment	16	Syenite	6
Andesite	2	Basic Igneous*	38
Sedimentary	2	Quartzite	12
		Metasediment	6
		Acid Igneous	18

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
60	80	4-5	800,000

Location #: J14-06

County: Victoria

Type of Deposit: Glaciofluvial blanket

Parish: Gordon

Exposure Type: Sand pit

NTS: 2] J/14W

Status: Active on demand

UTM: 306917

Section Description & Comments:

A thickness of 1.5 m of massive, moderately sorted, cobbly medium reddish sand is exposed. Cobble content is 5%, the average size 10 cm and pebbles are scarce. Clasts are subrounded.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
60	50	1.5	500,000

Location #: J14-07

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Borrow pit

NTS: 2] J/]4

Status: Abandoned

UTM: 331927

Section Description & Comments:

1.8 m of interstratified, well to moderately sorted sandy gravel with medium sand and gravelly coarse sand are exposed. Pebble average size is 2-3 cm; trace amount of cobbles. Clasts are mainly subrounded to rounded. This exposure presents dominantly sands.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
45	20	4	800,000

Location #: J14-08

County: Victoria

Type of Deposit: Ablation till

Parish: Gordon

Exposure Type: Borrow pit

NTS: 2] J/14W

Status: Abandoned

UTM: 262982

Section Description & Comments:

2 m of massive, moderately to poorly sorted, pebbly silty sand with occasional cobbles are exposed. Clasts are subangular to subrounded, spherical. The average pebble size is 2.5 cm.

6 m are slump covered.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		8	

Location #: J14-09

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Sand pit

NTS: 2] J/]4E

Status: Abandoned

UTM: 358969

Section Description & Comments:

0 - 1.2 m "Till like" deposit.
1.2 - 2.2 m Moderately sorted, interstratified, medium to coarse sand with silt and silty sand (pebble content 3%). Clasts are subrounded.
2.2 - 6.0 m Slump covered.

This is the only portion of the deposit with significant thickness. It is felt that this unit may not be continuous within the boundary designated on the map sheet.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	12.5	5	625,000

Location #: J14-10

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Gravel pit

NTS: 2] J/14E

Status: Abandoned

UTM: 438972

Section Description & Comments:

0 - 1.6 m Poorly to moderately sorted pebbly coarse sand, with trace amount of cobbles. Pebble content decreases downwards (20 to 10%). Clasts are mainly subrounded and blade-like.

1.6 - 4.8 m Slump covered.

D.O.T. data (1977) indicate that the deposit south of the Renous highway is very erratic and that recoverable reserves of good material are questionable.

D.O.T. data (1977) indicate an abrasion loss of 23.1 to 24.8%. Proposed uses are borrow, subbase, base course aggregate. They suggest a reserve figure of 35,000 m^3.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	93.8	90.0	82.9	62.5	41.5	26.5	7.7	2.0	1.0	0.9	0.9
D.O.T. 1977		67	51	32	20	11		3			1.9
D.O.T. 1977		86	72	51	28	11		3			1.4

Lithologic Analysis:

Unsound Lithotypes (%) 20		Sound Lithotypes (%) 80	
Sandstone	20	Basic Igneous*	10
		Sandstone	28
		Siltstone	26
		Acid Igneous	4
		Andesite	8
		Quartzite	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
37.5	7.5	4	30,000

Location #: J14-11

County: Victoria

Type of Deposit: Bedrock

Parish: Lorne

Exposure Type: Quarry

NTS: 21 J/14E

Status: Active on demand

UTM: 450047

Section Description & Comments:

This shale outcrop is 5 m high. Many other shale outcrops are observed in driving southwest on the road from this point to Gulquac River.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J14-12

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Stream cut

NTS: 2] J/]4W

Status: Undeveloped

UTM: 207986

Section Description & Comments:

Approximately 6 m of crudely stratified coarse sand and gravel are exposed. Pebble size ranges between 1 and 4 cm, trace amount of cobbles (6-10 cm). Clasts are rounded.

Only the bottom metre of this landform was exposed. More detailed investigations should be conducted on this deposit in order to make the recoverable reserve value reliable.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		88.6	79.9	61.6	46.3	38.5	24.5	13.1	6.2	3.2	2.3

Lithologic Analysis:

Unsound Lithotypes (%) 8		Sound Lithotypes (%) 92	
Sedimentary	4	Sandstone	36
Acid Igneous	2	Basic Igneous *	26
Conglomerate	2	Metasediment	20
		Acid Igneous	10

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2.5	2.5	4	100,000

Location #: J14-13 County: Victoria

Type of Deposit: Ice-contact Parish: Gordon

Exposure Type: Borrow pit NTS: 2] J/]4W

Status: Active on demand UTM: 207990

Section Description & Comments:

0 - 3.0 m Ablation till. Very poorly sorted: clast size ranges between 1-2 cm to boulders of 35 cm. The matrix is a very silty sand.
3.5 - 5.0 m Well sorted fine to medium sand. (Sample A)
5.0 - 7.5 m Moderately to poorly sorted pebbly silt. Pebble content is about 20%, few cobbles. Clasts are subangular to rounded. This unit does not have much cohesion.
7.5 - 8.6 m Silt
8.6 - 11.6 m "Till-like" desposit. Clasts are subangular to rounded.
11.6 - 13.6 m Cross-bedded sand and sandy pebble gravel grading downward into a cobbly pebble gravel. This 2 m is exposed in a trench below the pit floor. (Sample B)

D.O.T. data (1974) indicate a Los Angeles abrasion loss of 29.2% and that the material is only suitable for borrow.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing A		99.4	99.1	96.3	92.8	90.9	81.3	43.8	15.0	6.9	4.9
% Passing B	98.4	96.2	92.8	74.4	55.7	44.2	27.3	14.1	6.6	4.4	3.6
D.O.T. 1974	91		73	59	51	47		35			15.9
D.O.T. 1974	90		75	59	46	37		27			13.0

Lithologic Analysis:

Unsound Lithotypes (%)	A	B	Sound Lithotypes (%)	A	B
Sedimentary	16	24	Sandstone	38	30
Acid Igneous	8	0	Basic Igneous*	10	4
Sandstone	14	0	Metasediment	10	30
			Acid Igneous	4	2
			Siltstone	0	10

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	5	12	500,000

Location #: J14-14 County: Victoria

Type of Deposit: Glaciofluvial Parish: Gordon

Exposure Type: Gravel pit NTS: 21 J/14W

Status: Active UTM: 209991

Section Description & Comments:

0 - 1.0 m Medium sand.
1.0 - 3.0 m Moderately sorted, cross-bedded sandy pebble gravel. This unit is quite similar to the bottom unit of J14-13.

The recoverable reserve value takes into account the presence of Highway 385 and the proximity of the Tobique River.

D.O.T. data (1959) indicate a Los Angeles abrasion loss of 23.7 to 25.6% and that the material is suitable for subbase.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											
D.O.T. 1959			60.3		30.5			7.6			4.7
D.O.T. 1959			67.3		35.5			9.4			5.5

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	3	3	90,000

Location #: J14-15

County: Victoria

Type of Deposit: Ice-contact

Parish: Lorne

Exposure Type: Roadcut

NTS: 2] J/14W

Status: Undeveloped

UTM: 255045

Section Description & Comments:

A thickness of 7 m of poorly sorted, gravelly silt is exposed. Pebble size ranges between 2 and 6 cm (10-15%), cobble size between 6 and 18 cm. Clasts are well rounded.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			See J14-25

Location #: J14-16 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Borrow pit and roadcut NTS: 21 J/14W

Status: Active on demand UTM: 233055

Section Description & Comments:

0 - 2.0 m Crudely stratified, moderately sorted pebbly coarse sand, (15% pebble content). Clasts are subrounded to rounded, coated with fines.

2.0 - 3.0 m Slump covered.

Deposit boundaries were too indistinct to be mapped.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2-3	

Location #: J14-17

County: Victoria

Type of Deposit: Ice-contact

Parish: Gordon

Exposure Type: Borrow pit

NTS: 21 J/14W

Status: Active on demand

UTM: 195933

Section Description & Comments:

0 - 9.0 m Massive to crudely stratified, very poorly sorted, sandy gravel. Generally this deposit is slightly silty. Silt content varies. Clasts are subangular to subrounded. A few boulders as big as 1.5-2 m are included in this unit. (Biggest 3.5 m, unique, is imbedded in the deposit.)

9.0 - 12.0 m Crudely stratified, moderately sorted cobbly pebble gravel. Pebbles with sizes ranging from 1 to 3 cm are abundant. Clasts are coated with silt, quite ovoid in shape and subrounded to rounded.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	88.9	78.8	67.9	40.4	22.0	15.6	9.7	6.8	5.3	4.2	3.4

Lithologic Analysis:

Unsound Lithotypes (%) 8		Sound Lithotypes (%) 92	
Sandstone	8	Basic Igneous *	32
		Metasediment	26
		Sandstone	26
		Acid Igneous	6
		Quartzite	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2	2	8	160,000

Location #: J14-18 County: Victoria

Type of Deposit: Glaciofluvial Parish: Gordon

Exposure Type: Roadcut NTS: 2] J/14E

Status: Undeveloped UTM:]96885

Section Description & Comments:

Near the river bank is a stratified, moderately sorted coarse sand and sandy pebble gravel. Clasts are subrounded to rounded. This exposure is 3 m high. This deposit is too small to be mapped.

25 m west of this exposure a borrow pit shows 3.5 m of ablation till.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			Limited

Location #: J14-19

County: Victoria

Type of Deposit: Ice-contact

Parish: Gordon

Exposure Type: Borrow pit

NTS: 21 J/14

Status: Abandoned

UTM: 194867

Section Description & Comments:

7 m of crudely stratified, poorly sorted, gravelly silty sand, is exposed. The texture is pebbly to cobbly with brittle, hematized, weathered rafted sandstone boulders. This deposit shows an abundance of unsound clasts. This is a very poor quality of material; it could only be used for fill.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2.5	2.5	7	175,000

Location #: J14-20 County: Victoria

Type of Deposit: Alluvial blanket Parish: Gordon

Exposure Type: Roadcut NTS: 21 J/14W

Status: Undeveloped UTM: 198937

Section Description & Comments:

A thickness of 2 m of massive, well sorted, fine sand is exposed. This is a very localized deposit probably associated with the nearby brook. It is too small to be a mappable unit.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		0-2	Minimal

Location #: J14-21

County: Victoria

Type of Deposit: Ice-contact

Parish: Gordon

Exposure Type: Gravel pit

NTS: 21 J/14W

Status: Active on demand

UTM: 194952

Section Description & Comments:

0 - 3.0 m Stratified fine to medium sand.
3.0 - 6.0 m Poorly sorted cobbly, sandy, fine pebble gravel, silt lenses in places. Cobble content 15%, pebbles dominantly 2-4 cm. Clasts are mainly subrounded with fines coating them.
6.0 - 8.0 m Interstratified fine sand and gravel.

This deposit is located adjacent to an ablation till deposit and on the edge of a field under cultivation.

D.O.T. data (1971) indicate a Los Angeles abrasion loss of 27.9 to 33.4% and that the deposit is suitable for borrow and borderline subbase.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											
D.O.T. 1971	81		60	41	28	21		13			6.8
D.O.T. 1971	69		50	36	26	21		15			9.3

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
4	4	7-8	280,000

Location #: J14-22 County: Victoria

Type of Deposit: Ablation till and Ice-contact Parish: Gordon

Exposure Type: Gravel pit NTS: 21 J/14W

Status: Abandoned UTM: 193952

Section Description & Comments:

The east face exposes approximately 7 m of massive, poorly sorted cobbly pebble gravel in a silt matrix. Texture estimate: 2-3% cobbles, 25% pebbles. (2 mm to 3 cm size range), occasional boulders (30 cm). Clasts are subangular to subrounded.

The west face shows a deposit similar to J14-21: a cobbly sandy fine pebble gravel.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J14-23 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Dug hole NTS: 21 J/14W

Status: Undeveloped UTM: 178023

Section Description & Comments:

A hole was dug exhibiting 0.5 m of very poorly sorted silty cobbly gravel. Clasts are subrounded and flat. The water-table is high.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			Minimal

Location #: J14-24

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Gravel pit

NTS: 21 J/14W

Status: Active

UTM: 144973

Section Description & Comments:

Approximately 8 m of interstratified, moderately sorted, sand and gravelly medium sand are exposed. Pebbles are subrounded with size ranging from 3 mm to 3 cm. The material is loose except where cemented by calcium carbonate.

This deposit extends 2 km west on the Aroostook map sheet (21J/13).

D.O.T. data (1973) indicate a Los Angeles abrasion of 22.9 to 25.7%. The material can be recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.5	75.8	68.0	48.0	39.5	35.6	27.1	17.1	8.4	4.7	3.8
D.O.T. 1973	83.0		66.0	42.0	26.0	19.0		5.0			0.9
D.O.T. 1973	71.0		45.0	26.0	19.0	16.0		10.0			1.8

Lithologic Analysis:

Unsound Lithotypes (%) 24		Sound Lithotypes (%) 76	
Sedimentary	12	Metasediment	22
Sandstone	2	Quartz	2
		Basic Igneous*	22
		Sedimentary	34
		Quartzite	2
		Acid Igneous	4

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
7.5	7.5	8	600,000

Location #: J14-25

County: Victoria

Type of Deposit: Ice-contact

Parish: Lorne

Exposure Type: Borrow pit

NTS: 21 J/14W

Status: Abandoned

UTM: 262045

Section Description & Comments:

A thickness of 2.0 m of crudely stratified, poorly sorted, cobbly pebble sand grading downward into a pebbly silty sand is exposed. The dominant gravel size is 3 cm. Clasts are subrounded to rounded. Occasional boulders were noticed while cobbles are quite abundant. The next 2 m is slump covered.

D.O.T. data (1958) indicate a Los Angeles abrasion loss of 26.5 to 30.9%.

Ice-contact materials in the adjacent deposit to the east are estimated to be 1,500,000 m^3.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	82.6	75.9	70.5	56.2	42.9	33.8	21.5	8.9	4.2	3.2	2.8
D.O.T. 1958			57.7		35.1			10.0			0.9
D.O.T. 1958			55.5		30.7			7.4			0.7

Lithologic Analysis:

Unsound Lithotypes (%) 14		Sound Lithotypes (%) 86	
Sedimentary	12	Sandstone	34
Acid Igneous	2	Metasediment	44
		Acid Igneous	2
		Basic Igneous *	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
65	50	5	D.O.T. 50,000 1,800,000

Location #: J14-26 County: Victoria

Type of Deposit: Ice-contact Parish: Lorne

Exposure Type: Borrow pit and roadcut NTS: 21 J/14E

Status: Active on demand UTM: 220010

Section Description & Comments:

This pit was exploited in three levels:

Upper exposure:

0 - 12.0 m Crudely stratified, poorly sorted, cobbly pebbly silty sand with occasional boulders (1 m). Maximum cobble size is 18 cm. Clasts are subrounded.

Middle exposure:

12.0 - 15.0 m Crudely stratified, moderately sorted pebbly coarse sand (2 mm) border line with a fine pebble gravel. Silt lenses were noticed. Pebbles are subrounded, coated with silt, their sizes ranging from 1 to 5 cm.

(Con't next page)

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J14-26 Con't

County:

Type of Deposit:

Parish:

Exposure Type:

NTS:

Status:

UTM:

Section Description & Comments:

Bottom exposure:

15.0 - 20.0 m Stratified, moderately-well sorted, dark reddish brown, fine sand with a few 30 cm beds of pebbly fine sand. Clasts are subangular to subrounded.

See note regarding extent at location # J14-33.

D.O.T. data (1974) indicate a Los Angeles abrasion loss of 22.2 to 26.7%. Generally the deposit is recommended for borrow, subbase and base course aggregate.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											
D.O.T. 1974	91		75	39	18	9		3			1.5
D.O.T. 1974	82		48	29	16	8		3			1.7

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2.5	2	12	240,000

Location #: J14-27

County: Victoria

Type of Deposit: Weathered bedrock

Parish: Gordon

Exposure Type: Roadcut

NTS: 21J/14E

Status: Undeveloped

UTM: 352971

Section Description & Comments:

This exposure consists of weathered sandstone. Other exposures were observed in the local area. At this time, this material does not seem to be utilized even as a local borrow source. It appears to be weathered to a moderate depth.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J14-28 County: Victoria

Type of Deposit: Glaciofluvial Parish: Gordon

Exposure Type: Roadcut NTS: 21 J/14E

Status: Undeveloped UTM: 387971

Section Description & Comments:

0 - 0.6 m Overburden.
0.6 - 1.6 m Massive, moderately sorted, sandy cobble gravel, clasts are angular to subrounded, no characteristic shape is exhibited Clasts are coated with silt.
1.6 - 2.6 m Slump covered.

See note regarding unit extent in J14-09.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	79.3	64.5	56.2	38.8	27.9	21.0	11.3	4.8	2.2	1.5	1.4

Lithologic Analysis:

Unsound Lithotypes (%) 18		Sound Lithotypes (%) 82	
Sedimentary	8	Basic Igneous*	24
Volcanic	10	Sandstone	24
		Metasediment	20
		Andesite	4
		Quartzite	2
		Acid Igneous	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	625,000

Location #. J14-29 County: Victoria

Type of Deposit: Alluvium Parish: Lorne

Exposure Type: Gravel pit NTS: 21 J/14W

Status: Inactive UTM: 301052

Section Description & Comments:

Approximately 3.5 m of stratified, moderately to poorly sorted, fine sand and pebbly fine to medium sand are exposed. Occasional cobbles were noticed. Clasts are subrounded and flat. The thickness of the beds varies between 7 and 40 cm.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	95.7	83.0	77.6	66.0	50.5	45.8	35.9	13.9	2.2	1.0	0.9

Lithologic Analysis:

Unsound Lithotypes (%) 8		Sound Lithotypes (%) 92	
Sandstone	8	Basic Igneous*	20
		Sandstone	50
		Metasediment	14
		Felsic Extrusive	2
		Acid Igneous	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
27	15	3	450,000

Location #: J14-30 County: Victoria

Type of Deposit: Ablation till Parish: Gordon

Exposure Type: Borrow pit NTS: 21 J/14W

Status: Abandoned UTM: 327857

Section Description & Comments:

A thickness of 4.0 m of reddish-brown till is exposed. It is a moderately to poorly sorted pebbly silty coarse sand with occasional cobbles and boulders. Clasts are angular to subangular. Dominant pebble size is 2 cm.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		8	

Location #: J14-31 County: Victoria

Type of Deposit: Kame terrace Parish: Gordon

Exposure Type: Roadcut NTS: 21 J/14

Status: Undeveloped UTM: 261915

Section Description & Comments:

0 - 0.3 m Overburden.
0.3 - 10.3 m Massive, poorly sorted gravel. Clast size ranges between 1 mm to 15 cm with no dominant size; they are subangular to subrounded. Some clasts are coated with fines.

The width of this terrace is 10 m. It is flanking a 20 m high till exposure.
Railroad uses top of terrace.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	92.0	84.8	79.1	55.3	34.2	25.5	11.7	6.1	3.6	2.5	2.0

Lithologic Analysis:

Unsound Lithotypes (%) 24		Sound Lithotypes (%) 76	
Sandstone	24	Sandstone	48
		Basic Igneous *	16
		Metasediment	6
		Acid Igneous	6

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		10	

Location #: J14-32 **County:** Victoria

Type of Deposit: Glaciofluvial **Parish:** Gordon

Exposure Type: Sand pit **NTS:** 21 J/14

Status: Active **UTM:** 241933

Section Description & Comments:

2.5 m of medium sand with occasional pebbles (1-2 cm) are exposed. Most useable material has been removed from pit area.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
3	2.5	2.5	60,000

Location #: J14-33

County: Victoria

Type of Deposit: Ice-contact

Parish: Lorne

Exposure Type: Borrow pit

NTS: 21 J/14W

Status: Abandoned

UTM: 233032

Section Description & Comments:

Approximately 6.0 m of poorly sorted reddish brown, medium sand and pebbly to cobbly gravel are exposed. Occcasional boulders are noticed. The silt content varies widely throughout the exposure.

It is felt that this unit extends as far south as 4 km toward the Renous Highway. The deposit would be discontinuous within that area and of varying thickness (1 to 6 m). This deposit is also of a very poor quality.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
36	30	6	1,500,000

Location #: J14-34 County: Victoria

Type of Deposit: Glaciofluvial Parish: Lorne

Exposure Type: Roadcut NTS: 21 J/14E

Status: Undeveloped UTM: 255038

Section Description & Comments:

A thickness of 1.5 m of well sorted, reddish brown medium sand is exposed.

See note concerning extent at location # J14-33.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
60	50	1.5	600,000

Location #: J14-35 County: Victoria

Type of Deposit: Ice-contact Parish: Lorne

Exposure Type: Borrow pit NTS: 21 J/14E

Status: Abandoned UTM: 262038

Section Description & Comments:

2.0 m of crudely stratified, poorly sorted, cobbly pebble gravel are exposed. Clasts are subrounded to rounded. Silt was noticed in places.

See note regarding extent on J14-33.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		2	See J14-34

Location #: J14-36

County: Victoria

Type of Deposit: Ice-contact

Parish: Gordon

Exposure Type: Gravel pit

NTS: 21 J/14W

Status: Abandoned

UTM: 204885

Section Description & Comments:

Approximately 1.5 m of poorly sorted, crudely stratified, silty gravelly coarse sand are exposed. Small cobbles are present in the exposure. Clasts are subrounded to rounded and coated with silt. Maximum clast size 8 cm. Some silt lenses (6 cm) were observed. Another 3.5 m is slump covered and assumed to be gravel.

Most of the deposit is under cultivation at present. The highway and railway both traverse its length.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
150	100	4-5	4,000,000

Location #: J14-37

County: Victoria

Type of Deposit: Ice-contact

Parish: Gordon

Exposure Type: Railroad cut

NTS: 21 J/14

Status: Undeveloped

UTM: 204870

Section Description & Comments:

8.0 m of poorly sorted, massive pebbly reddish brown silt is exposed in railway cut. Clasts are subrounded to rounded, almost ovoid in shape. Occasional boulders and cobbles were observed.

This is an isolated mound of 100 m x 250 m. Only 0.5 m was exposed at the bottom of the hill. High concentration of roots did not allow a more detailed investigation of this material although it appeared to be of poor quality

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		6	

Location #: J14-38 County: Victoria

Type of Deposit: Ice-contact Parish: Gordon

Exposure Type: Borrow pit NTS: 21 J/14W

Status: Abandoned UTM: 201860

Section Description & Comments:

0 - 2.0 m Crudely stratified, moderately to poorly sorted coarse sand grading downward into a pebbly to cobbly gravelly sand to sandy gravel. Unsound lithotypes are abundant (some as big as boulders). Boulders are very scarce. Clasts are sub-rounded to rounded and coated with silt.
2.0 - 4.0 m Slump covered.
4.0 - 6.0 m (Trench below the pit floor). Cobbly pebble gravel.

Additional reserves (up to 750,000 m^3) might be exploitable around the area for which reserves were calculated below.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
40	2.2	3	55,000

Location #: J14-39

County: Victoria

Type of Deposit: Ice-contact

Parish: Lorne

Exposure Type: Borrow pit

NTS: 21 J/14W

Status: Abandoned

UTM: 204983

Section Description & Comments:

This exposure is 8.5 m high. The uppermost bed (1 m) is a poorly sorted, cobbly pebbl y fine sand with high fines content and rounded clasts. Boulders (40 cm) are sparse. At places this deposit appears to be dipping towards the east; in others cross-bedded, lenticular and even showing contorted beds. About 60% of this exposure is a very fine sand. The bottom two metres show a sandy fine pebble gravel.

D.O.T. data (1971) indicate a Los Angeles abrasion loss of 25.4%. This material can be recommended for borrow, subbase, and base course aggregate. According to the logs, the deposit is somewhat erratic. No reserves are estimated by D.O.T.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	90.2	80.8	76.0	54.7	36.7	27.6	16.8	9.7	5.9	3.4	2.3
D.O.T. 1971	88.0		65.0	47.0	35.0	26.0		12.0			2.5
D.O.T. 1971	94.0		73.0	54.0	38.0	29.0		16.0			2.8

Lithologic Analysis:

Unsound Lithotypes (%) 14		Sound Lithotypes (%) 86	
Sandstone	14	Basic Igneous*	10
		Sandstone	38
		Quartz	2
		Metasediment	26
		Acid Igneous	8
		Felsic Intrusive	2

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
6	5.5	4-8	300,000

Location #: J15-01

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Lorne

Exposure Type: Borrow pit

NTS: 21 J/15W

Status: Abandoned

UTM: 595028

Section Description & Comments:

0 - 0.3 m Ablation till; massive, poorly sorted cobbly pebble gravel in a silty sand matrix. Clasts are subangular.
0.3 - 1.1 m Oxidized soil horizon iron rich.
1.1 - 1.6 m Moderately to poorly sorted cobbly pebble coarse sand. Clasts are coated with silt.
1.6 - 4.0 m Slump covered.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing		92.8	88.0	71.5	54.0	44.6	31.3	18.3	12.1	8.9	6.5

Lithologic Analysis:

Unsound Lithotypes (%) 6		Sound Lithotypes (%) 94	
Sedimentary	6	Acid Igneous	42
		Basic Igneous*	30
		Sandstone	14
		Metasediment	8

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	4	3	120,000

Location #: J15-02

Type of Deposit: Bedrock

Exposure Type: Quarry

Status: Active on demand

County: Victoria

Parish: Gordon

NTS: 21 J/15W

UTM: 656019

Section Description & Comments:

Weathered granite.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J15-03

County: Victoria

Type of Deposit: Ablation till

Parish: Gordon

Exposure Type: Borrow pit

NTS: 21 J/15W

Status: Active on demand

UTM: 626922

Section Description & Comments:

Approximately 2 m of a light beige, moderately sorted, pebbly silty sand with occasional cobbles are exposed. Clasts are subangular to subrounded.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		3	

Location #: J15-04

County: Victoria

Type of Deposit: Glaciofluvial

Parish: Gordon

Exposure Type: Borrow pit

NTS: 21 J/15W

Status: Active on demand

UTM: 638875

Section Description & Comments:

This exposure is 3 m high. It shows a massive, poorly to moderately sorted, pebbly coarse sand. Clast size ranges between 2 mm and 10 cm. Few small cobbles are noticed.

Bulldozers intensely reworked this deposit leaving only poor exposures. It is too small to be mapped.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J15-05 County: Northumberland

Type of Deposit: Glaciofluvial Parish: Southesk

Exposure Type: Road cut NTS: 21 J/15E

Status: Undeveloped UTM: 791878

Section Description & Comments:

0 - 0.6 m Lag boulders.
0.6 - 1.6 m Massive, moderately to poorly sorted cobbly pebbl fine sand. Clasts are angular to subrounded. Pebble size average 3 cm.
1.6 - 6.6 m Slump covered, assumed to be gravel.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	93.4	88.7	84.6	75.9	67.2	62.9	56.1	47.9	37.5	24.4	13.2

Lithologic Analysis:

Unsound Lithotypes (%) 4		Sound Lithotypes (%) 96	
Sedimentary	4	Basic Igneous*	30
		Acid Igneous	66

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	12	5.0	500,000

Location #: J15-06 County: Northumberland

Type of Deposit: Glaciofluvial Parish: Southesk

Exposure Type: Borrow pit NTS: 21 J/15E

Status: Abandoned UTM: 793878

Section Description & Comments:

0 - 1.0 m Overburden.
1.0 - 5.0 m Interstratified, well sorted, fine sand and pebbly medium sand. Cobbles are scarce.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
			See J15-05

Location #: J15-07

County: Northumberland

Type of Deposit: Glaciofluvial

Parish: Southesk

Exposure Type: Road cut

NTS: 21 J/15E

Status: Undeveloped

UTM: 797878

Section Description & Comments:

0 - 0.3 m Overburden
0.3 - 1.5 m Massive, moderately sorted, pebbly sand. Boulders, cobbles, and silt content is very low. Clasts are subangular to sub-rounded.

A broad glaciofluvial deposit extending southwards from this site along the Dungarvon River may contain reserves estimated to be approximately 4,500,000 m^3 assuming a minimum thickness of 1 metre.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
450		1	Minimal Due to thinness of deposit.

Location #: J15-08 County: Northumberland

Type of Deposit: Glaciofluvial Parish: Southesk

Exposure Type: Borrow pit NTS: 21 J/15E

Status: Abandoned UTM: 821870

Section Description & Comments:

Upper section of the pit:

0 - 0.6 m Overburden.
0.6 - 1.6 m Massive, moderately sorted, light beige deposit, on the border line between a pebbly sand and a sandy gravel; silt content is very low.
1.6 - 2.6 m Slump covered.

Lower section of the pit:

2.6 - 4.6 m Interstratified fine sand with pebbly coarse sand. The top unit (0.5 m) is a laminated fine sand with medium sand and silt. Beds are dipping 25° W.

Another exposure 250 m to the southwest shows more of the upper section. It is a pebbly very coarse sand with occasional cobbles and boulders. Silt is only coating the clasts. Maximum clast size is 0.8 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
15	12.7	4-6	640,000

Location #: J15-09

County: Northumberland

Type of Deposit: Ablation till

Parish: Southesk

Exposure Type: Borrow pit

NTS: 21 J/15E

Status: Abandoned

UTM: 813946

Section Description & Comments:

The thickness of the overburden is 50 cm. Then 2.5 m of a light beige, poorly sorted, cobbly pebbly silty sand is exposed. Clasts are subangular to subrounded. Boulders are scarce, their maximum size is 45 cm. The bottom of the pit is filled with water.

Mechanical Analysis: n/a

Sieve	1¼"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J15-10

County: Northumberland

Type of Deposit: Glaciofluvial

Parish: Southesk

Exposure Type: Borrow pit

NTS: 21 J/15E

Status: Abandoned

UTM: 840035

Section Description & Comments:

0 - 0.5 m Overburden.
0.5 - 2.0 m Crudely stratified medium sand and gravel. The gravel consists of a poorly sorted cobbly pebbly coarse sand. Clasts are sub-rounded to rounded. Maximum clast size is 15 cm. Sand layers exhibit a thickness of 7 cm while the gravel presents thicknesses of 30 to 80 cm.

This deposit has been intensely exploited. The surrounding area has been converted into a recreational area.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing	66.8	54.1	45.5	35.2	28.1	24.4	16.5	4.0	0.8	0.5	0.5

Lithologic Analysis:

Unsound Lithot.	(%) 5	Sound Lithotypes (%) 95	
Acid Igneous	5	Acid Igneous	43
		Metasediment	9
		Basic Igneous *	26
		Sandstone	12
		Quartzite	5

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	6	2	100,000

Location #: J15-11

County: Northumberland

Type of Deposit: Glaciofluvial

Parish: Southesk

Exposure Type: Borrow pit

NTS: 21 J/15E

Status: Active on demand

UTM: 856034

Section Description & Comments:

Approximately 1.5 m of stratified medium sand grades downwards into a pebbly sand.

Within the meltwater channel shown on the map is an extensive but shallow deposit of glaciofluvial materials. The entire meltwater channel covers an estimated 30 km and averages 500 m in width. Reserves based on these figures are very substantial assuming an average of 1 metre thickness: 15,000,000 m^3? Also developed in the meltwater channel is remnant esker system which now appears discontinuous along the length. A 15 km section of the entire channel crosses the NE corner of this map sheet.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
See note above.	2.5	1.5	37,000

Location #: J15/12

County: Northumberland

Type of Deposit: Glaciofluvial

Parish: Southesk

Exposure Type: Gravel pit

NTS: 21 J/15E

Status: Abandoned

UTM: 867029

Section Description & Comments:

A thickness of 3 m of poorly sorted cobbly pebble medium sand is exposed. Maximum clast size is 15 cm. They are subrounded to rounded.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
8	8	3	240,000

Location #: J15-13 County: Northumberland

Type of Deposit: Glaciofluvial veneer Parish: Southesk

Exposure Type: Trench NTS: 21 J/15E

Status: Abandoned UTM: 858993

Section Description & Comments:

Approximately 1.5 m of poorly sorted, cobbly pebble gravel, with occasional boulders (max. size 1 m) are exposed. Clasts are mainly sub-angular to subrounded.

Mechanical Analysis:

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis:

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
20	20	1	200,000

Location #: J15-14 County: Northumberland

Type of Deposit: Ice contact Parish: Southesk

Exposure Type: Gravel pit NTS: 21 J/15E

Status: Active on demand UTM: 879035

Section Description & Comments:

The uppermost bed (1.5 m) is a fine to medium sand overlying a pebble gravel. Clasts are subrounded. Cobbles are scarce. It is then followed by 3.5 m of slump covering.

Most of the extent of the deposit bordering the Miramichi River shows a hummocky topography: The southeast section of the deposit consists of isolated mounds 2-3 m high. Other than these mounds, exploitation of flat lying deposits is limited considering the proximity of this river. There is actually no direct access to the northwest section of the Miramichi deposit and as the thickness is not expected to be more than 2 m utilization of this portion of the deposit is probably not economically feasible.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
2	2	3.5	70,000

Location #: J15-15

County: Victoria

Type of Deposit: Bedrock

Parish: Gordon

Exposure Type: Quarry

NTS: 21 J/15W

Status: Abandoned

UTM: 572932

Section Description & Comments:

This is a gneiss weathered to a depth of 2.5 m.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J15-16 County: Victoria

Type of Deposit: Bedrock Parish: Gordon

Exposure Type: Quarry NTS: 21 J/15W

Status: Abandoned UTM: 536907

Section Description & Comments:

This is an exposure of 2.5 m of weathered shale.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable

Location #: J15-17

County: Northumberland

Type of Deposit: Ablation till

Parish: Southesk

Exposure Type: Borrow pit

NTS: 21 J/15E

Status: Abandoned

UTM: 794875

Section Description & Comments:

Approximately 5 m of very poorly sorted, massive cobbly pebble silty coarse sand with abundant boulders as big as 1 m are exposed. This deposit is possibly a till.

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
		4	

Location #: J15-18

County: Northumberland

Type of Deposit: Glaciofluvial

Parish: Southesk

Exposure Type: Borrow pit

NTS: 21 J/15E

Status: Abandoned

UTM: 812863

Section Description & Comments:

5 m of interstratified very fine sand to medium sand with pebbly sand and cobbly pebbly sand are exposed. Occasional boulders were noticed (maximum size 1 m).

Mechanical Analysis: n/a

Sieve	1½"	1"	3/4"	3/8"	#4	8	16	30	50	100	200
% Passing											

Lithologic Analysis: n/a

Unsound Lithotypes (%)	Sound Lithotypes (%)

Estimation of Reserves:

Total deposit area (hectares)	Area workable (hectares)	Average thickness (meters)	Recoverable reserves (m^3) probable
10	10	3-4	350,000

MAPS NOT FILMED

CARTES OMISES